

CLASS- IX
SUBJECT- SCIENCE

CHAPTER - 14

NATURAL RESOURCES

MODULE 2/3

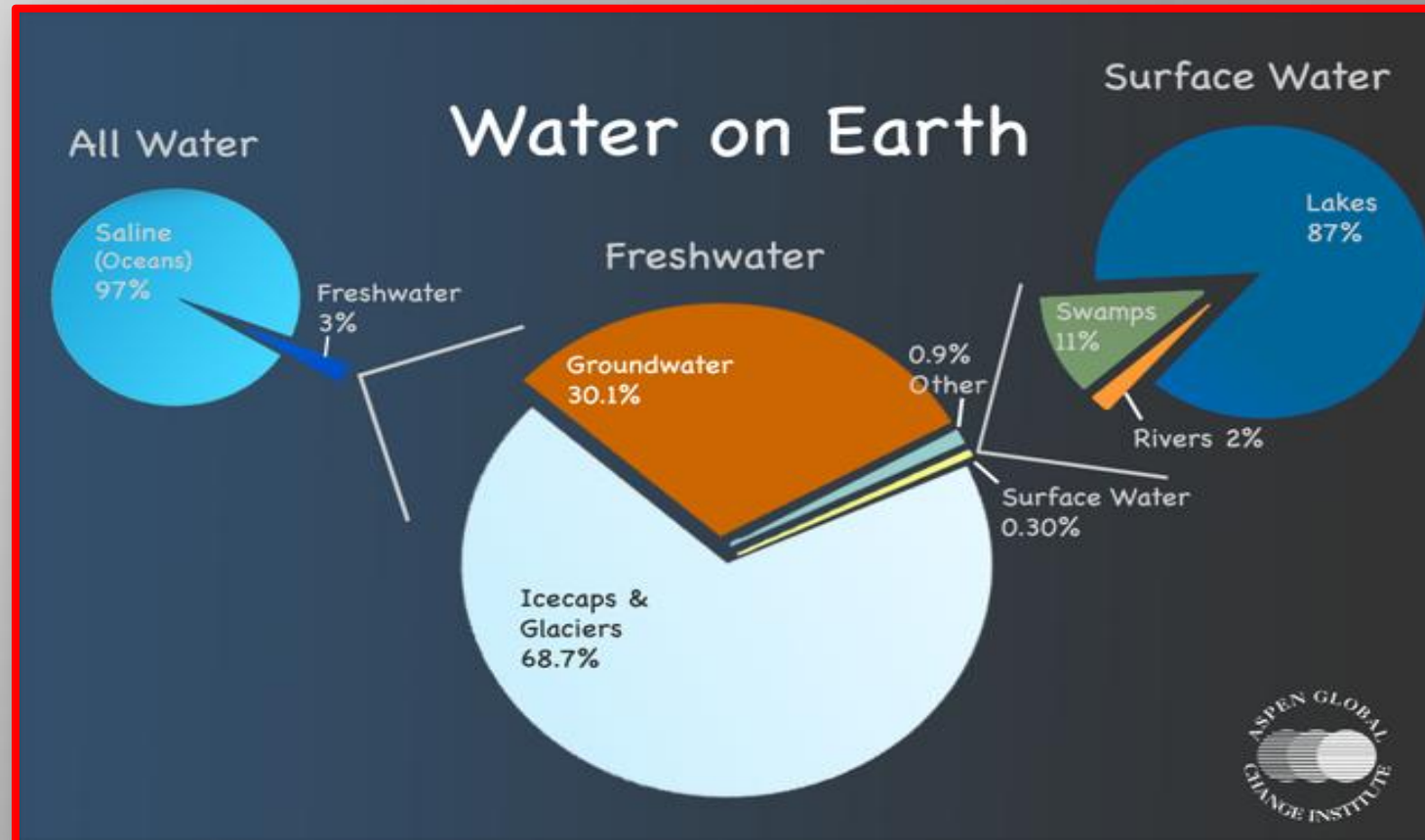


WATER : A WONDER LIQUID

A very large area of the earth's surface is covered with water. Water is also found inside the earth, in the atmosphere as water vapour. **The water in seas and oceans is saline.**

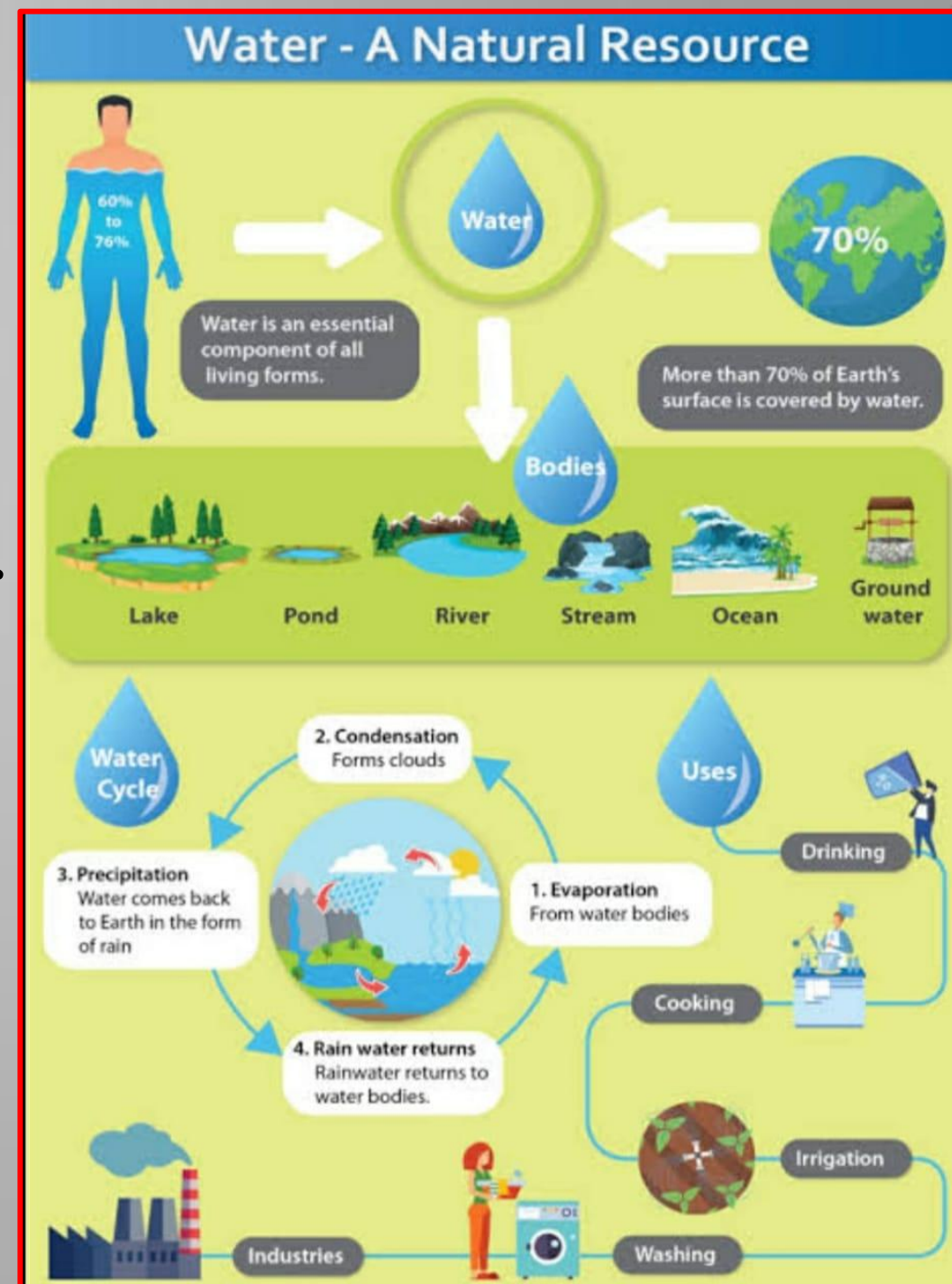
Fresh water is found in rivers, lakes, ponds and as ice and snow at the poles and mountains in cold regions.

Terrestrial life-forms require fresh water for this because their bodies cannot tolerate or get rid of the high amounts of dissolved salts in saline water.



Water is needed by living organisms because all **life processes and cellular activities** need water. So all organisms need water to survive.

The amount of water and other factors like temperature and nature of soil decides the **diversity of species** and the number of individuals of each species in an area.



Water Pollution

It is contamination of water with unwanted and harmful substances in water adversely affect on living organism is called water pollution.

Water-Pollution cover the following effects:

1. The addition of undesirable substances to water-bodies.
2. The removal of desirable substances from water-bodies.
3. A change in temperature of water.



Water-Pollution to cover the following effects:

▣ 1. The addition of undesirable substances to water-bodies.

These substances could be the fertilisers and pesticides used in farming or they could be poisonous substances, like mercury salts which are used by paper-industries. These could also be disease-causing organisms, like the bacteria which cause cholera.



▣ 2. The removal of desirable substances from water-bodies.

Dissolved oxygen is used by the animals and plants that live in water. Any change that reduces the amount of this dissolved oxygen would adversely affect these aquatic organisms. Other nutrients could also be depleted from the water bodies.



▣ **3. A change in temperature of water.**

Aquatic organisms are used to a certain range of temperature in the water-body where they live, and a sudden marked change in this temperature would be dangerous for them or affect their breeding. The eggs and larvae of various animals are particularly susceptible to temperature changes.



CAUSES OF WATER POLLUTION

Industrial Waste.



Sewage and Wastewater.



Mining Activities



Marine Dumping.



Accidental Oil Leakage.



The burning of fossil fuels



PREVENTION OF WATER POLLUTION

- 1. Save Water:** Conserving water is our first aim. Water wastage is a major problem globally and we are only now waking up to the issue. Simply small changes you can make domestically will make a huge difference.
- 2. Better treatment of sewage:** So treating waste products before disposing of it in a water body helps reduce water pollution on a large scale. Agriculture or other industries can reuse this wastewater by reducing its toxic contents.
- 3. Use environmentally friendly products:** By using soluble products that do not go on to become pollutants, we can reduce the amount of water pollution caused by a household.

SOIL

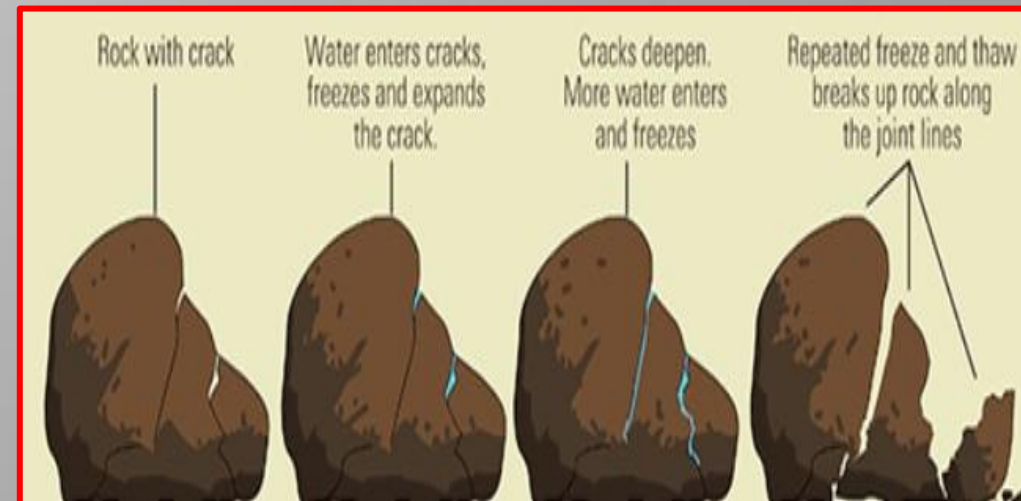
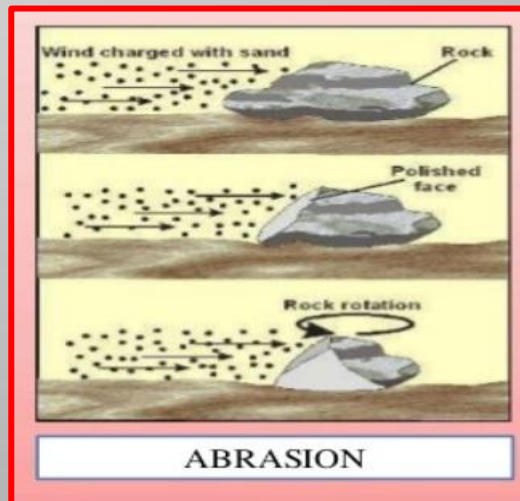
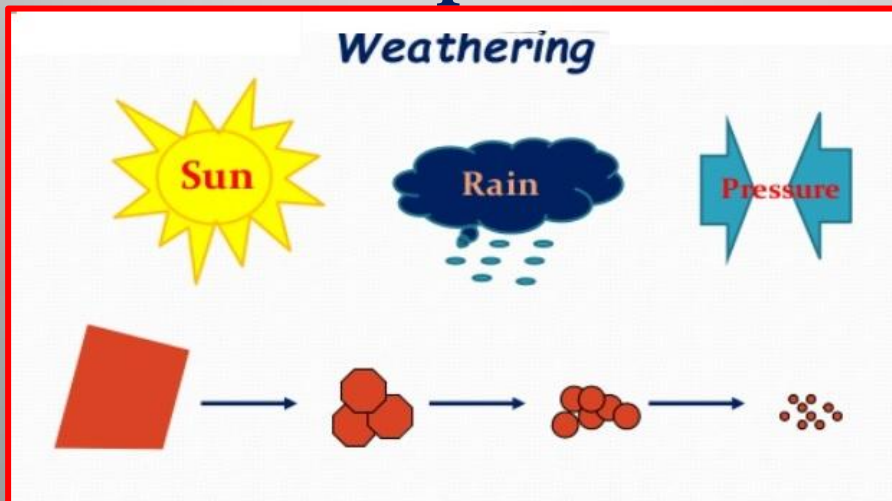
Soil is a mixture which contains small particles of rock (of different sizes). It also contains bits of decayed living organisms which is called humus.

The *type* of soil is decided by the average *size* of particles found in it and the *quality* of the soil is decided by the amount of *humus* and the *microscopic organisms* found in it.



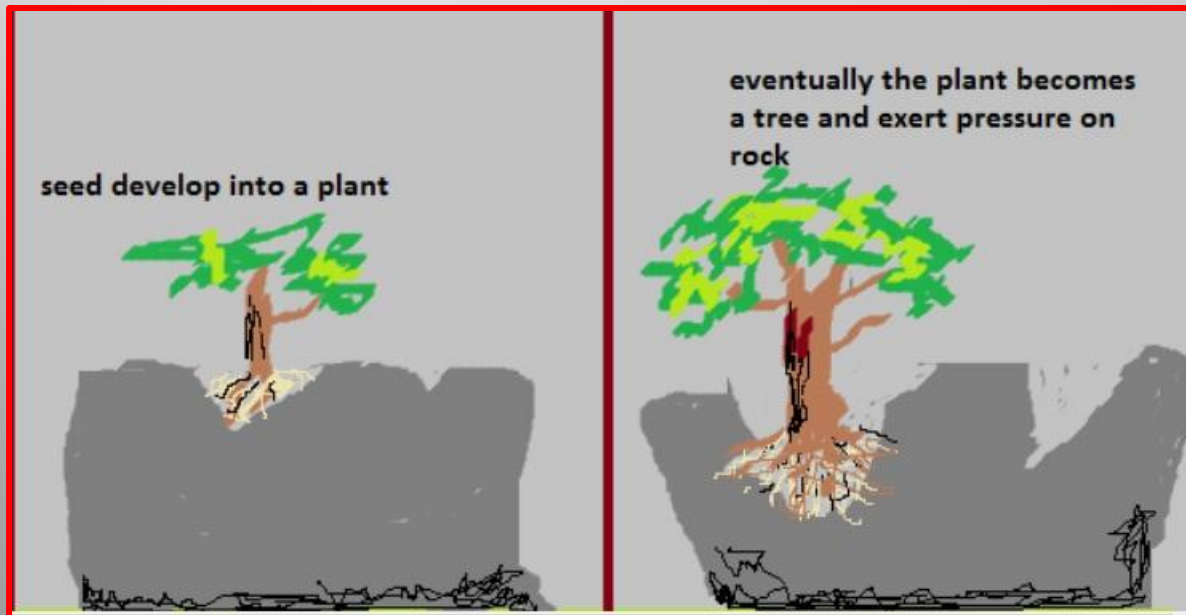
FORMATION OF SOIL :-

- ▣ Soil is formed by the breaking down of rocks on the surface of the earth by physical, chemical and biological processes.
- ▣ The **Sun** heats the rocks during the day and the rocks expand and at night the rocks cool and contracts. This causes the rocks to crack and break into smaller pieces.
- ▣ **Water** enters the cracks in the rocks and when water freezes, it expands and causes the cracks in the rocks to widen and break into smaller pieces. The flowing water carries the rock pieces. These pieces rub against each other and become smaller and smaller particles.
- ▣ Strong **winds** also breaks rocks into smaller particles and carries it from one place to the other.



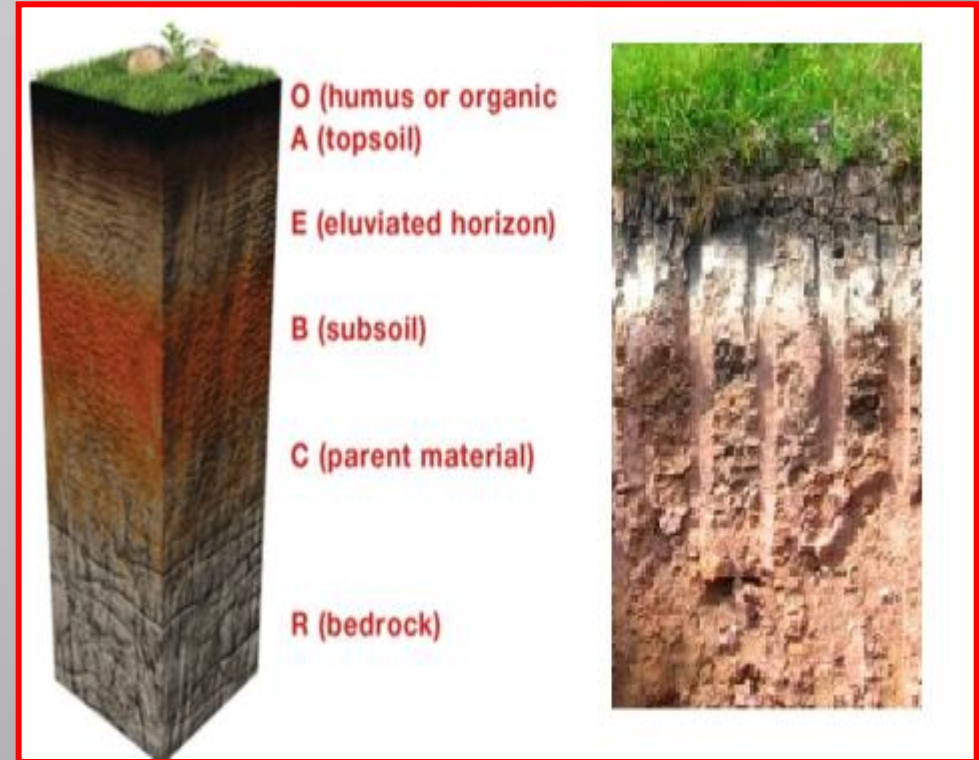
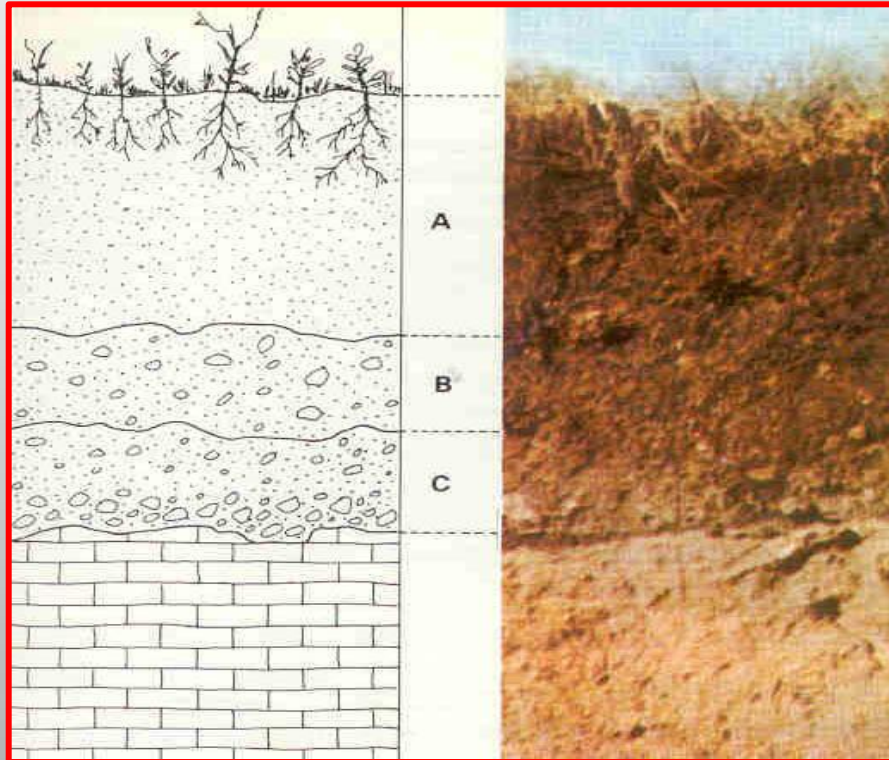
FORMATION OF SOIL

- ▣ The **roots** of large trees grow into the cracks in rocks and breaks it into smaller pieces.
- ▣ **Lichens** which grow on rocks produce some substance which cause the rock surface to powder and become soil.



COMPOSITION OF SOIL

Soil is a mixture of rock particles, decayed organisms called humus, living organisms, minerals, air and water. The amount of minerals, humus, air and water are the factors which decides the biodiversity in that area.



Soil Pollution

- ▣ **The addition of harmful substances and removal of useful components from the soil which affects the fertility of the soil and kills the diversity of organisms living in it is called soil pollution.**
- ▣ **Soil pollution is caused by the excessive use of fertilisers and pesticides. It kills the organisms like earthworms and bacteria which makes the soil rich in humus.**
- ▣ **The removal of useful components and addition of other harmful substances reduces the fertility of soil and causes soil pollution.**

CAUSES OF SOIL POLLUTION

- ❑ Seepage from a landfill.



- ❑ Discharge of industrial waste into the soil.



- ❑ Excess application of pesticides, herbicides or fertilizer.



- ❑ Percolation of contaminated water into the soil.



- ❑ Rupture of underground storage tanks.



- ❑ Solid waste seepage.



SOIL EROSION

The carrying away of soil from one place to the other by flowing water and wind is called soil erosion.

Large scale deforestation also causes soil erosion.

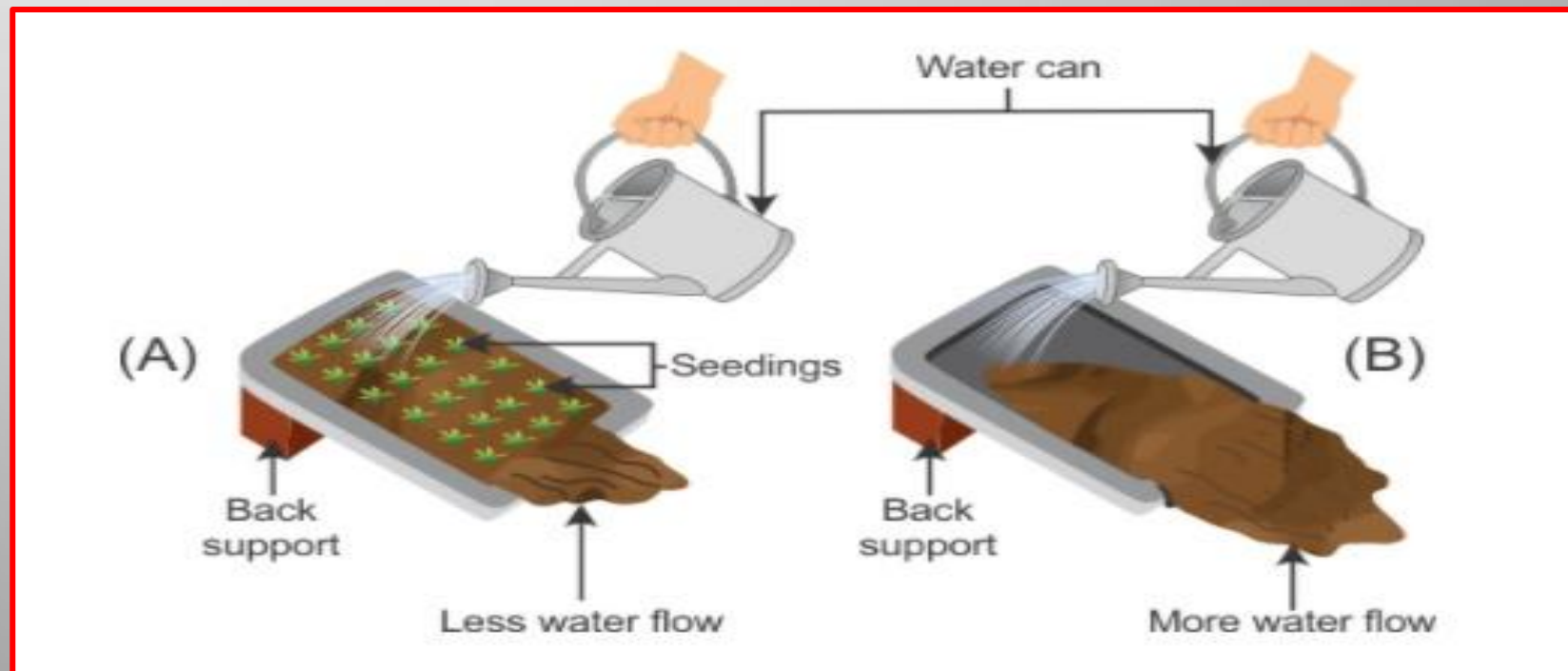
Soil erosion can reduced or prevented by
vegetative cover on the ground, afforestation,
construction of bunds, terraces, dams etc.



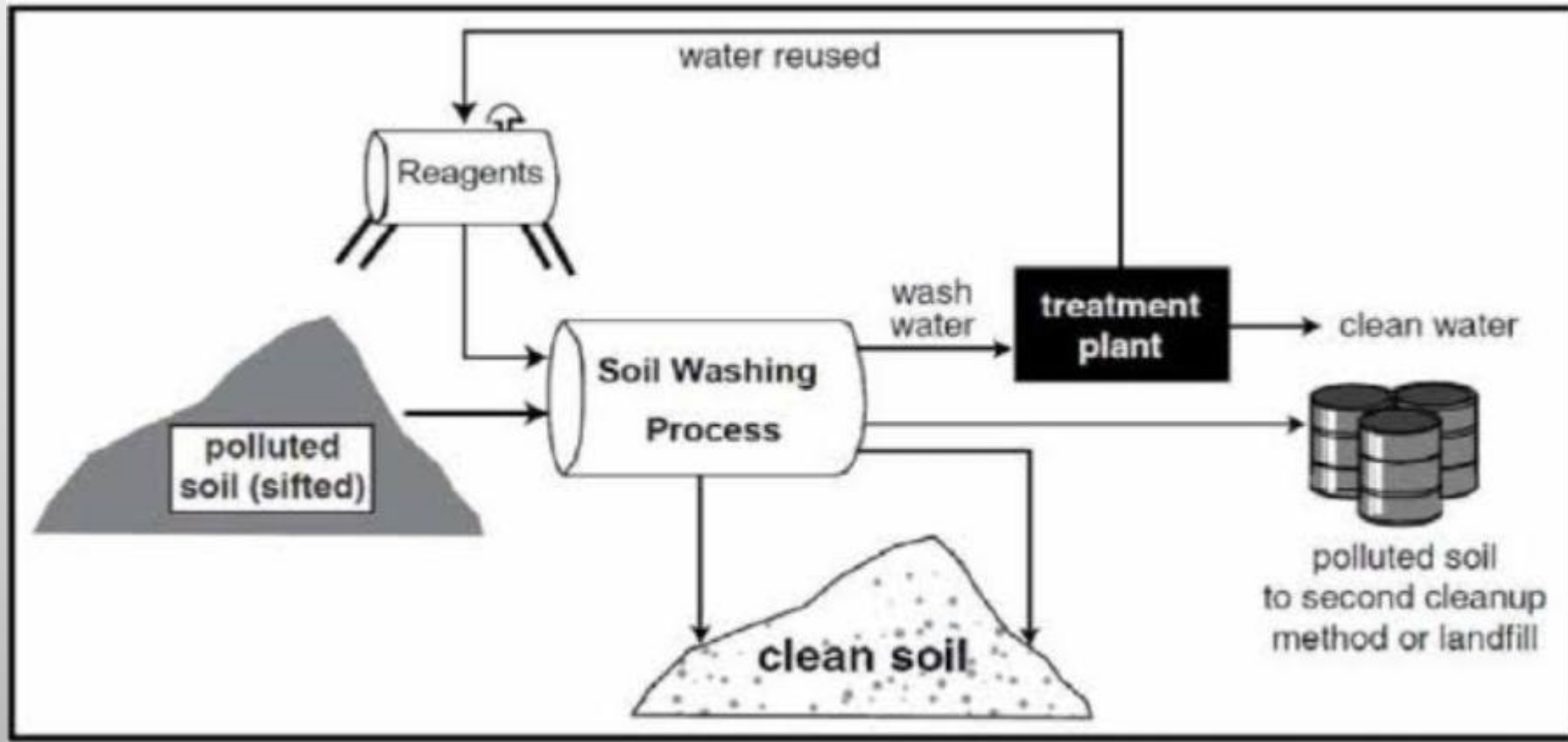
Activity - Effect of flowing water on top soil.

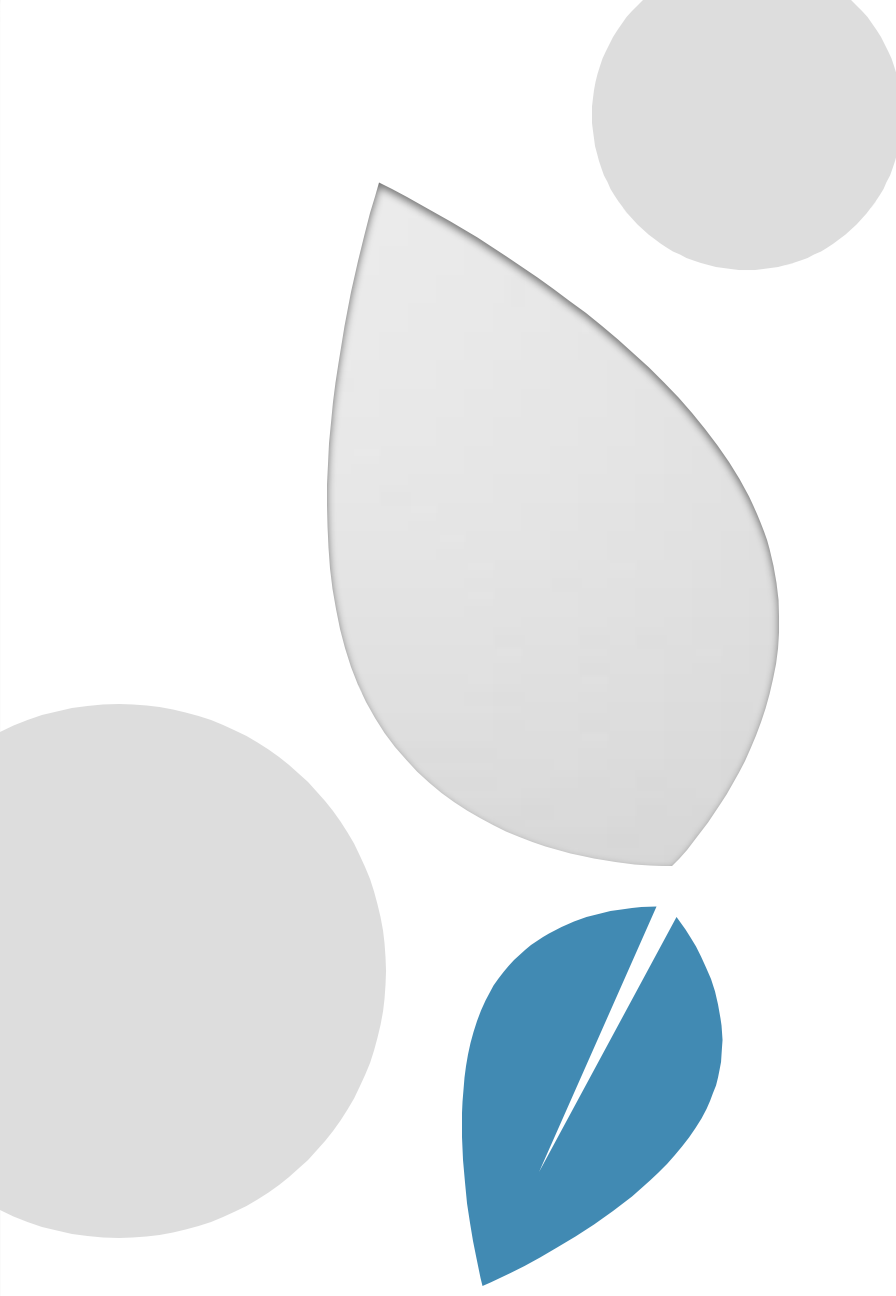
- 1) Take two trays A and B of the same size and fill them with soil.
- 2) Plant mustard or green gram in one of the trays.
- 3) Water both the trays for a few days till the first tray is covered by plant growth.
- 4) The tilt both the trays at the same angle.
- 5) Pour equal amount of water gently on both the trays.
- 6) More soil is carried out of the tray B which did not have plant growth.

This shows that vegetative cover reduces soil erosion.



Soil Treatment





**Thank
You!!!**